

form of large droplets of a thin sheet or film of such solution. If the solution coming from openings 98 was in the form of too small droplets or atomized as a fine spray, there could be too great a temperature drop to efficiently take advantage of both hot temperature cleaning and carbonation. The determining of such parameters will be made according to the size of the equipment and operation desired and can be readily determined by one skilled in the art from the description contained herein.

Completing the application means 100 is supplemental solution means 104 on frame 124 for holding an aerosol can and switch means 138 mounted in conjunction with handle means 142. While the specific mechanism is not shown, it is apparent that switch means 138 can be connected by a line or plunger means to an aerosol nozzle at the end of a canister mounted in means 104 such that, pulling or sliding handle 142 backwards along frame 124 can cause the aerosol nozzle to be depressed and some of the contents in the aerosol canister to be sprayed at a point directly in front of shroud 128. These contents can be a prespray of solvent, stain remover, detergent concentrate or any other fluid required or desired from treating excessively soiled or stained fabrics and carpets in particular.

When applying the carbonating solution to a textile surface through openings 98, the manifold 94 will be positioned such that the openings 98 will be between 0.5 and 2 inches from the textile to be cleaned, and will emit large droplet or sheets of the composition. Traditional applicators have atomized the cleaning solution to evenly spread the solution on the textile. However, atomized solution loses heat rapidly and it is difficult to maintain enough heat so that the composition contacting the carpet is in excess of 140° F. Such a minimum temperature is important because the fibers of many modern carpets are designed to return to their original orientation when cleaned with hot solutions. Thus, to transport the composition from the containers 18 and 22 (FIG. 1) to the manifold openings 98 as described, it is important not to waste additional heat due to atomization. To resolve this concern, the openings 98 emit large droplets which wastes substantially less heat than atomizing the solution. The sheet of cleaning composition, because it is a carbonating solution, penetrates the textile just as rapidly and efficiently as if the composition was applied from a pressurized container.

Because the solution is carbonating and the carbonating reaction continues even after application to the fabric, a shroud 128 is usually provided so that the composition does not spray items adjacent to the textile. This is of particular concern in cleaning upholstery and carpet, as chemicals which clean these textiles can sometimes be damaging to other household fixtures.

When a prespray canister, contained in means 104 mounted on the frame 124, is used to pretreat stains before the carbonating solution composition is applied such application is greatly simplified over conventional type of application. When using the applicator 100 of the present invention, the operator need not put the applicator down each time a stain is encountered. As noted above, the means 104 is controlled by a switch 138 mounted in conjunction with or adjacent to a handle 142 and can be activated concurrently with the application of the carbonating solution.

When the applicator system 10 is used with internally carbonating compositions, the two solutions, typically a carbonate solution and an acid solution are directed to the mixing chamber 50 by the lines 44 and 64 respectively. Once in the mixing chamber 50, the two solutions are combined

and begin to react. As they do so, carbon dioxide bubbles are formed, causing the composition to expand in volume. The reacting composition is forced through the tube 90 and out the manifold 94 so that it contacts the textile. The time difference from the point of mixing solutions in chamber 50 to application of a hot carbonating solution on the textile will typically take between about 0.5 and 3 seconds. Because the reaction of the carbonate salt and the acid in solution is typically between 0.5 to 15 seconds, the composition is still reacting when it reaches the textile to be cleaned. Thus, effervescent carbon dioxide is applied to the carpet, providing a superior cleaning ability that carbonated solutions using conventional pressurized applicators cannot obtain. The ongoing release of carbon dioxide from the composition using the system described herein overcomes any problems associated with the decrease of carbon dioxide solubility which occurs when heating a precarbonated composition.

After being applied to the textile, whether carpet or upholstery, the composition is allowed to remain on the carpet for a short period of time. The composition, along with oil and soil particulate that have been removed from the fibers of the textile, are then removed by either an absorbent pad or by vacuuming the area.

In summary, a dual solution application system is provided. The system utilizes dual holding containers, feed lines and a mixing chamber to enable reactive solutions to be stored separately, but mixed together immediately prior to application on a textile. It is to be understood that the above-described arrangements are only illustrative of the application of the principles of the present invention. Numerous modifications and alternative arrangements may be devised by those skilled in the art without departing from the spirit and scope of the present invention. The appended claims are intended to cover such modifications and arrangements.

What is claimed is:

1. A solution application system for mixing at least two solutions and applying the mixed solutions to textiles comprising:

supply means on a mobile base said means containing containers for separately holding each solution, means for heating the solution in each container to a desired temperature and means for delivery of solution from each container to a feed means,

applicator means comprising a portable elongate support structure having a proximal solution receiving end and a distal solution application end said support frame being contoured from the proximal to distal end outwardly and downwardly and containing an intermediate handle means between said proximal and distal ends, valve means attached to said proximal end containing a valve for each solution to be delivered, each valve having a connector for receiving solution from a container through a feed means and adapted to deliver said solution to a mixing means, mixing means for receiving said solutions from said valve means and causing said solutions to form a mixed solution at essentially ambient pressure, conveying means for directing said mixed solution at essentially ambient pressure from said mixing means to an application manifold means and application manifold means attached to the distal solution application end of said support structure for receiving mixed solution from said conveying means, said manifold means having exit ports to direct said mixed solution to a textile fiber, and feed means interconnecting each container of said supply means to a connector of said valve means of said